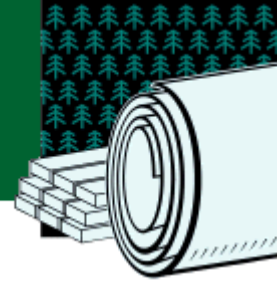# FOREST PRODUCTS
## Project Fact Sheet

## QUANTIFYING AND PREDICTING WOOD QUALITY OF LOBLOLLY AND SLASH PINE UNDER INTENSIVE FOREST MANAGEMENT

**BENEFITS**

- Increased process efficiency
- Improved wood quality
- Decreased processing energy requirements

**APPLICATIONS**

This technology can be applied to intensive forest management methods for loblolly and slash pine. Over 2 million acres of loblolly and slash pine are planted annually, and market share is anticipated to be 100 percent.

## Better Understanding of Intensive Forest Management Will Increase Processing Efficiency

Intensive competitive control and fertilization is a promising method to increase wood production. However, how this method will affect wood properties, such as density, strength, dimensional stability, and fiber length, is not yet well understood. This project seeks to identify how intensive forest management affects southern pine wood properties, product mix, and efficiency and use that data to improve the efficiency of wood processing.

Researchers will develop models that can predict wood properties based on raw material information. This data will improve efficiency by allowing growers to factor in objectives for quality and quantity and predict the value of the increased volume of wood. Using models, growers can choose management regimes that will optimize these crop value variables. Wood property data could also lead to much greater raw material and energy efficiencies in the mill.

## PROJECT DESCRIPTION

**Goal:**  Identify key factors affecting wood quality of loblolly and slash pine and develop predictive models that can determine the effects of intensive management on wood quality.

Long-term field studies will provide information on the effects of intensive forest management (vegetative control, fertilization, vegetation control plus fertilization at stand establishment) on cell anatomical structure, specific gravity, wood strength and stiffness, and length of juvenility. Researchers will then correlate basic properties with strength, stiffness, and dimensional stability along with energy requirements for pulp, paper, and wood products. Models can then be developed to predict wood quality from within the tree, from stump to tip and pith to bark.

## PROGRESS & MILESTONES

- Graduate research for five Universities will be coordinated and is listed below:
    - Auburn University- will conduct competition omission monitoring study;
    - North Carolina State University- will conduct region-wide fertilization and examine site preparation alternatives;
    - University of Florida- will conduct understory competition control plus fertilization studies;
    - University of Georgia- will conduct planing stock X vegetation control studies;
    - Virginia Tech- will conduct South-wide intensive culture studies.
- Samples from each of the listed Universities will be taken, wood properties will be analyzed, and modeling will be conducted.
- Predictive models are expected to increase in total system energy and cost efficiency by 10%.
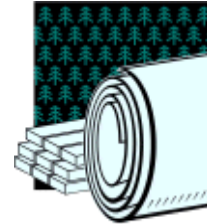
**PROJECT PARTNERS**

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